

DR 604

PHILADELPHIA OIL COMPANY

SAMPLE DESCRIPTIONS
WELL NO. P-19

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| 0- 30 | Light grey coarse grained orthoquartzitic sand tan coarse grained sand; abundant in mica |
| 30- 60 | Same |
| 60 -90 | Grey fine grained Shale |
| 90-120 | Grey fine grained Shale; light grey coarse grained orthoquartzitic sand; abundant in mica. |
| 120-150 | Same |
| 150-180 | Same |
| 180-210 | Same |
| 210-240 | Same |
| 240-270 | Light grey finely ground orthoquartzitic sand; few fragments of grey fine grained Shale; abundant in mica |
| 270-300 | Same |
| 300-330 | Same |
| 330-360 | Light grey coarse grained orthoquartzitic sand; grey fine grained Shale |
| 360-390 | Same |
| 390-420 | Grey fine grained Shale |
| 420-450 | Light grey finely ground orthoquartzitic sand; few fragments of grey fine grained Shale |
| 450-480 | Same |

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| 480-510 | Grey fine grained Shale; abundant mica; few fragments of light grey orthoquartzitic sand |
| 510-540 | Same |
| 540-570 | Same |
| 570-600 | Grey fine grained Shale |
| 600-630 | Same |
| 630-660 | Same |
| 660-690 | Same |
| 690-720 | White coarse grained quartzitic sand; few fragments of grey fine grained Shale; abundant in mica |
| 720-750 | White coarse grained quartzitic sand; grey fine grained Shale |
| 750-780 | Same |
| 780-810 | White coarse grained quartzitic sand; grey fine grained Shale; abundant mica |
| 810-840 | Same |
| 840-870 | Same |
| 870-900 | Same |
| 900-930 | Grey fine grained Shale |
| 930-960 | Same |
| 960-990 | Same |
| 990-1020 | Same |
| 1020-1050 | Light grey finely ground sand; grey fine grained Shale; abundant mica |
| 1050-1080 | Same |

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| 1080-1110 | Grey fine grained Shale |
| 1110-1140 | Same |
| 1140-1170 | Grey fine grained Shale; light grey coarse grained Shale; abundant mica |
| 1170-1200 | Same |
| 1200-1230 | Same |
| 1230-1260 | Same |
| 1260-1290 | White finely ground quartzitic sand; few fragments of grey fine grained Shale |
| 1290-1320 | Same |
| 1320-1350 | Grey fine grained Shale |
| 1350-1380 | Same |
| 1380-1410 | Same |
| 1410-1440 | Grey fine grained Shale; abundant mica |
| 1440-1470 | Same |
| 1470-1500 | Light grey finely ground quartzitic sand; few fragments of grey fine grained Shale; abundant mica |
| 1500-1530 | Same |
| 1530-1560 | White finely ground quartzitic sand; few fragments of grey fine grained Shale |
| 1560-1590 | Same |
| 1590-1620 | Same |
| 1620-1650 | White finely ground quartzitic sand; few fragments of grey fine grained Shale |
| 1650-1680 | Same |

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| 1680-1710 | Grey fine grained Shale |
| 1710-1740 | Same |
| 1740-1770 | Light grey coarse grained quartzitic sand; abundant in mica |
| 1770-1800 | Same |
| 1800-1830 | Light grey finely ground quartzitic sand; grey fine grained Shale |
| 1830-1860 | Grey fine grained Shale |
| 1860-1890 | Grey fine grained Shale; light grey coarse grained orthoquartzitic sand; abundant mica |
| 1890-1920 | Same |
| 1920-1950 | White coarse grained quartzitic sand; few fragments of grey fine grained Shale |
| 1950-1980 | Grey coarse grained quartzitic sand; abundant mica |
| 1980-2010 | Grey coarse grained quartzitic sand; grey fine grained Shale |
| 2010-2040 | Grey fine grained Shale; Red Rock |
| 2040-2070 | Grey fine grained Shale |
| 2070-2100 | Same |
| 2100-2130 | Same |
| 2130-2160 | Light grey finely ground quartzitic sand; few fragments of grey fine grained Shale |
| 2160-2190 | Same; few fragments exhibit reddish-brown iron stain |
| 2190-2220 | Same |

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| 2220-2250 | Grey fine grained Shale |
| 2250-2280 | Same |
| 2280-2310 | Same |
| 2310-2340 | Same |
| 2340-2370 | Same |
| 2370-2400 | Grey fine grained Shale |
| 2400-2430 | Same |
| 2430-2460 | Same |
| 2460-2490 | Same |
| 2490-2520 | Grey fine grained Shale; white finely ground orthoquartzitic sand; few fragments of Red Rock |
| 2520-2550 | Buff finely ground quartzitic sand; few fragments exhibit reddish brown iron stain |
| 2550-2580 | Same; plus few fragments of grey fine grained Shale |
| 2580-2610 | Same |
| 2610-2640 | Same |
| 2640-2670 | Buff finely ground quartzitic sand; grey dolomitic lime; grey fine grained Shale; reddish-brown iron stain evident on some fragments |
| 2670-2700 | Same plus Red Rock |
| 2700-2730 | No sample |
| 2730-2760 | Grey fine grained Shale; Red Rock; few fragments of grey dolomitic lime |
| 2760-2790 | Same; plus few fragments of buff finely ground sand |
| 2790-2820 | Red Rock |
| 2820-2850 | Red Rock; grey fine grained Shale; grey dolomitic lime. |

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| 2850-2880 | Same |
| 2880-2910 | Grey dolomitic lime; few fragments of white fine grained calcitic lime; light grey massive lime; Red Rock, grey fine grained Shale |
| 2910-2940 | Same |
| 2940-2970 | Same |
| 2970-3000 | Grey fine grained Shale; Red Rock; few fragments of white fine grained calcitic lime. |
| 3000-3030 | Buff finely ground quartzitic sand; few fragments of grained Shale and red rock |
| 3030-3060 | Same |
| 3060-3090 | Same |
| 3090-3120 | Same |
| 3120-3150 | Same |
| 3150-3180 | Buff fine grained quartzitic sand; grey fine grained Shale; few fragments of Red Rock |
| 3180-3210 | Same |
| 3210-3240 | Grey fine grained Shale |
| 3240-3270 | Buff finely ground quartzitic sand |
| 3270-3300 | Grey fine grained Shale; buff finely ground quartzitic sand |
| 3300-3360 | Same |
| 3360-3390 | Grey fine grained Shale; light grey finely ground quartzitic sand |
| 3390-3420 | Grey fine grained Shale |
| 3420-3450 | Grey fine grained Shale; grey massive lime |
| 3450-3480 | Dark grey lime; grey fine grained Shale; few fragments of white fine grained calcitic lime. |

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| 3480-3510 | Grey fine grained Shale |
| 3510-3540 | Grey fine grained Shale; grey massive lime |
| 3540-3570 | Same |
| 3570-3600 | Same |
| 3600-3630 | Dark grey lime; grey fine grained Shale |
| 3630-3660 | Grey massive lime; few fragments of grey fine grained Shale |
| 3660-3690 | Grey fine grained Shale |
| 3690-3720 | Grey fine grained Shale; light grey massive lime |
| 3720-3750 | Same |
| 3750-3780 | Same |
| 3780-3810 | Same |
| 3810-3820 | Same |
| | Top of Big Lime 3820 |

PHILADELPHIA OIL COMPANY

BIG LIME SAMPLES
WELL NO. P-19

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| 3820-3830 | Grey massive lime; white fine grained calcitic lime; few fragments of dark grey dolomitic lime |
| 3830-3840 | Same |
| 3840-3850 | Same |
| 3850-3860 | Same |
| 3860-3870 | Grey massive lime; few fragments of white fine grained calcitic lime |
| 3870-3880 | Grey massive lime; white fine grained calcitic lime |
| 3880-3890 | Same |
| 3890-3900 | Grey massive lime; few fragments exhibit reddish brown iron stain; few fragments of white fine grained calcitic lime |
| 3900-3910 | Grey massive lime; few fragments of dark grey dolomitic lime; few fragments of white crystalline lime |
| 3910-3920 | Same |
| 3920-3930 | Grey dolomitic lime; few fragments exhibit reddish brown iron stain; white fine grained calcitic lime |
| 3930-3940 | Same |
| 3940-3950 | Grey massive lime; white fine grained calcitic lime; light grey crystalline lime; few fragments of grey fine grained Shale |
| 3950-3960 | Same |
| 3960-3970 | Same |

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| 3970-3980 | Grey massive lime; white fine grained calcitic lime; light grey crystalline lime |
| 3980-3990 | White fine grained calcitic lime; light grey crystalline lime; grey massive lime |
| 3990-4000 | Same |
| 4000-4010 | Light grey massive lime; white fine grained calcitic lime; few fragments of grey fine grained Shale |
| 4010-4020 | Same |
| 4020-4030 | Same; plus few fragments of grey fine grained Shale |
| 4030-4040 | Same |
| 4040-4050 | Same |
| 4050-4060 | Grey massive lime with inclusions of white fine grained calcitic lime; few fragments of light grey crystalline lime |
| 4060-4070 | Same |
| 4070-4080 | Grey massive lime; white fine grained calcitic lime; few fragments exhibit reddish brown iron stain; few fragments of light grey crystalline lime |
| 4080-4090 | Same |
| 4090-4100 | Same |
| 4100-4110 | White fine grained calcitic lime; white crystalline lime; few fragments of grey massive lime |
| 4110-4120 | Same |
| 4120-4130 | Same |
| 4130-4140 | White fine grained calcitic lime with rust stain dolomitic line; few fragments of white crystalline lime. |

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| 4140-4150 | Grey massive lime; white fine grained calcitic lime; white crystalline lime |
| 4150-4160 | Same; few fragments exhibit reddish brown stain |
| 4160-4170 | Light grey massive lime; white fine grained calcitic lime; white crystalline lime |
| 4170-4180 | Same |
| 4180-4190 | Same |
| 4190-4200 | Same |
| 4200-4210 | Same |
| 4210-4220 | Grey massive lime; white fine grained calcitic lime; few fragments of grey crystalline lime |
| 4220-4230 | Same |
| 4230-4240 | Same |
| 4240-4250 | Same |
| 4250-4260 | Grey massive lime; white fine grained calcitic lime; white crystalline lime |
| 4260-4270 | Same |
| 4270-4280 | White fine grained calcitic lime; light grey crystalline lime; grey massive lime |
| 4280-4290 | Same |
| | Bottom of Big Lime |
| 4290-4300 | Red fine grained sand; grey massive lime |
| 4300-4320 | Red fine grained sand |
| 4320-4330 | Dark grey fine grained Shale and red fine grained sand |
| 4330-4380 | Grey fine grained Shale |
| 4380-4410 | Same |
| 4410-4440 | Same |

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| 4440-4470 | Grey fine grained Shale; grey massive lime; light grey quartzitic sand |
| 4470-4500 | Same |
| 4500-4530 | Same |
| 4530-4560 | Grey fine grained Shale; grey massive lime |
| 4560-4860 | Same |
| 4860-4890 | Dark brown fine grained Shale (Coffee Shale) |
| 4890-4920 | Same |
| 4920-4930 | Same |
| | Top of Berea 4930' |

PHILADELPHIA OIL COMPANY

BEREA SAMPLES
WELL NO. P-19

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|-----------|--|
| 4930-4940 | Dark brown fine grained Shale; light grey fine grained quartzitic sand; few fragments of white fine grained calcitic lime |
| 4940-4950 | Grey fine grained quartzitic sand; light grey fine grained quartzitic sand; white fine grained calcitic lime; few fragments of dark brown fine grained Shale |
| 4950-4960 | Same |
| 4960-4970 | Grey fine grained quartzitic sand; light grey quartzitic sand; few fragments exhibit reddish brown iron stain; few fragments of white fine grained calcitic lime |
| 4970-4980 | Same; plus few fragments of grey fine grained Shale |
| 4980-4990 | Same |
| 4990-5000 | Grey fine grained quartzitic sand; white fine grained calcitic lime; few fragments of grey fine grained Shale |
| 5000-5010 | Same |
| 5010-5020 | Same |
| 5020-5030 | Grey fine grained quartzitic sand; dark grey fine grained Shale; few fragments of white fine grained calcitic lime. Bottom of Berea 5030 |
| 5030-5120 | Dark grey fine grained Shale |